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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/029,848 | 12/31/2001 | Jae Hyung Lee | 049128-5034 | 5336 |

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EXAMINER

NELSON, ALECIA DIANE

ART UNIT PAPER NUMBER

2675

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,848

Applicant(s)

LEE ET AL.

Examiner

Alecia D. Nelson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. ***Claims 1-7 and 10-13*** are rejected under 35 U.S.C. 102(e) as being anticipated by Nishimura (U.S. Patent No. 2001/0002829).

With reference to **claims 1 and 11**, Nishimura teaches a liquid crystal polarity inversion driver determining whether a polarity of a liquid crystal is inverted and inverting the polarity of the liquid crystal in accordance with the determined result (see paragraph 0043-0044); a first data polarity inversion driver (10-1) determining whether a first data transition is occurred in the first data, and inverting the polarity of the first data in accordance with the determined result (see paragraph 0049); a second data polarity inversion driver (10-2) determining whether a second data transition is occurred and

inverting the polarity of the second data in accordance with the determined result (see paragraph 0049). With further reference to **claim 11**, Nishimura teaches dividing input data by first (odd) and second (even) data (see paragraph 0038-0039).

With reference to **claims 2, 3, and 12**, Nishimura teaches that the first data polarity inversion driver includes, a first data transition part (11) determining whether the first data transition has occurred in the first data and outputting a first signal (inv1) (see paragraph 0053); a first data polarity inversion signal summer (21) counting the number of the first signal that a data polarity is changed according to the first data transition and determining whether an output level is high or low (see paragraph 0057); and a first data polarity inversion signal output part (22) receiving the first signal and the determined output level from the first data transition part and the first data polarity inversion signal summer and outputting an inverting signal (dd1-24) for inverting output data (paragraph 0057, Fig 4). With further reference to **claim 3**, Nishimura teaches that the components of data polarity inversion judgment/generation units 10-1 through 10-4 have the same construction, therefore the construction of the second data polarity inversion driver (10-2) has the same construction to that which is described with reference to the first data polarity inversion driver (10-1).

With reference to **claims 4 and 5**, Nishimura teaches that the first and second data transition part includes first (13) and second (14) flip-flops and an exclusive logical sum gate (23) comparing current data with previous data to determine whether the first

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data transition has occurred in accordance with the compared result (see paragraph 0053).

With reference to **claims 6 and 7**, Nishimura teaches that the first and second data inversion signal summer includes an adder (42,44) adding the number of data with a data transition from the first and second data transition part; and a majority detector (46) determining whether the added number of the data is higher than a first reference value (see paragraph 0057).

With reference to **claim 10 and 13**, Nishimura teaches that the first and second data are odd data and even data (see paragraph 0038-39).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 8 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura as applied to **claim 1** above, and further in view of Applicant's admittance of prior art.

Nishimura teaches all that is required as explained above with reference to **claim 1**, however fails to teach that the data polarity inversion signal output part includes a multiplexor receiving the signal from the summer to invert the output data. However, Nishimura does teach the usage of a summer and outputting inverted data as explained above.

Applicant's admitted prior art teaches a first data polarity inversion signal output part which includes a multiplexor (48,50) receiving a first polarity inversion signal from the first data polarity inversion signal summer (32) to invert the output data (see paragraph 0023).

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to allow the output part to consist of a multiplexor, as disclosed by the Applicant's admittance of prior art, in a system comprising a first and second data polarity inversion driver as taught by Nishimura in order to thereby provide a liquid crystal display which outputs inverted data to be applied to the liquid crystal panel in

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order to reduce the amount of change of data output which reduces power consumption and noise generated.

6. **Claims 14 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura.

Nishimura teaches all that is required as explained above with reference to **claim 11**, however fails to specifically teach that the total number of input data bits is 18 and the number of the first and second data bits is 9. Nishimura does teach that making the number of bits of input data (24) and dividing the output ports into two ports as explained, the effect of reducing the amount of change of data output can also be obtained in the case of inverting data in 24-bit units by dividing 96 bits of data among four ports (see paragraph 0061-0069).

Therefore it would be obvious to one having ordinary skill in the art to allow fewer input data bits to be driven to the display, as suggested by Nishimura in order to thereby provide a liquid crystal display device wherein the amount of change of data output causes a reduction in power consumption in the drive circuit of the liquid crystal display and an improvement in the EMI characteristics of the liquid crystal display.


Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alecia D. Nelson whose telephone number is (703)305-0143. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras can be reached on (703)305-9720. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

adn/ADN
September 27, 2003


DENNIS-DOON CHOW
PRIMARY EXAMINER